



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,043	08/10/2006	Hideki Oki	S1459.70129US00	4064
23628 7590 03/17/2008 WOLF GREENFIELD & SACKS, P.C. 600 ATLANTIC AVENUE BOSTON, MA 02210-2206				
EXAMINER				
BEST, ZACHARY P				
ART UNIT		PAPER NUMBER		
4191				
MAIL DATE		DELIVERY MODE		
03/17/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

## Application No.

10/589,043

## Applicant(s)

OKI ET AL.

## Examiner

Zachary Best

## Art Unit

4191

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 10 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date 08/10/2006

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Inventor's Patent Application
- 6) ☐ Other: \_\_\_\_\_

**ELECTROCHEMICAL DEVICE AND ELECTRODE**

Examiner: Z. Best    S.N. 10/589,043    Art Unit: 4191    March 11, 2008

***Claim Objections***

1. Claim 6 is objected to because aluminum is a Group 3A element of the short-form periodic table, which is not listed in Claim 1. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 5-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Hoffman et al. (U.S. Patent No. 4,894,302 A).

Regarding Claim 1, Hoffman et al. teach an electrochemical device which comprises a first pole (3), a second pole (2), and an ionic conductor (4), wherein said first pole containing an active material comprising Ru or Co (col. 5, lines 61-65, Group 8), and said ionic conductor containing Mg, Al, or Ca (Hoffman et al. claims 1-2).

Regarding Claim 2, Hoffman et al. teach the electrochemical device of the first pole is manganese oxide or cobalt oxide (col. 5, lines 65-68).

Regarding Claim 3, Hoffman et al. teach said cobalt oxide ( $\text{Co}_3\text{O}_4$ ), which has a ratio of M/X of 0.75.

Regarding Claim 5, Hoffman et al. teach the first pole is formed from the active material mixed with a conductive material and a polymeric binder (col. 6, lines 3-14).

Regarding Claim 6, Hoffman et al. teach said ions from the ionic conductor are Mg, Al, or Ca (Hoffman et al. claims 1-2).

Regarding Claim 7, Hoffman et al. teach said second pole contains magnesium or calcium (Hoffman et al. claim 2).

Regarding Claim 8, Hoffman et al. teach said ionic conductor is an electrolytic solution (Hoffman et al. abstract) or suggest a solid electrolyte (col. 2, lines 59-62).

Regarding Claim 9, Hoffman et al. teach said electrochemical device is a secondary battery (rechargeable, col. 1, lines 37-39).

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoffman et al., as applied to Claims 1-3, 5-9, and in further view of Isenberg (U.S. Patent No. 4,054,729 A).

Hoffman et al. teach an electrochemical device as recited in Paragraph 2 above. However, Hoffman et al. fail to teach said active material for the first pole has an average particle diameter no smaller than 1 nm and no larger than 100  $\mu\text{m}$ .

Isenberg teaches an electrochemical cell comprising a first pole comprising, among other things, iron sulfide (Isenberg claim 4), a second pole comprising, among other things, Mg, Al, or Ca (Isenberg claim 2), and an ionic conductor comprising, among other things, Mg ions (col. 3, lines 54-61). Isenberg further teach that said first pole active material has an average particle diameter between 100 nm (0.1  $\mu\text{m}$ ) and 50  $\mu\text{m}$  because the first pole will have resultant good surface area for electrochemical interaction (col. 3, lines 33-46). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to create the electrochemical device of Hoffman et al. wherein said first pole active material has an average particle diameter between 100 nm and 50  $\mu\text{m}$  because Isenberg teach resultant good surface area of the first pole for ideal electrochemical interaction of the device.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zachary Best whose telephone number is (571) 270-3963. The examiner can normally be reached on Monday to Thursday, 7:30 - 5:00 (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on (571) 272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

zpb

/Dah-Wei D. Yuan/  
Supervisory Patent Examiner, Art Unit 4191